

Parental Guidance

Fat FET-based distortion
with an active mids preamp



Important notes

If you're using any of our footswitch daughterboards, DOWNLOAD THE DAUGHTERBOARD DOCUMENT

- Download and read the appropriate build document for the daughterboard as well as this one BEFORE you start.
- DO NOT solder the supplied Current Limiting Resistor (CLR) to the main circuit board even if there is a place for it. This should be soldered to the footswitch daughterboard.

POWER SUPPLY

Unless otherwise stated in this document this circuit is designed to be powered with 9V DC.

COMPONENT SPECS

Unless otherwise stated in this document:

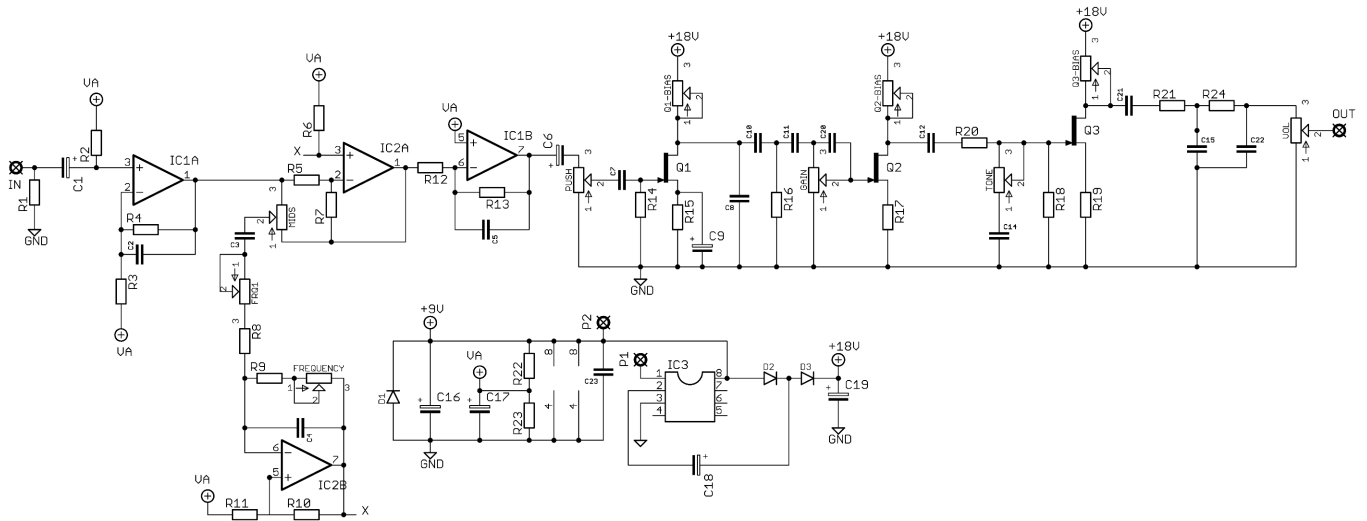
- Resistors should be 0.25W. You can use those with higher ratings but check the physical size of them.
- Electrolytics caps should be at least 25V for 9V circuits, 35V for 18V circuits. Again, check physical size if using higher ratings.

LAYOUT CONVENTIONS

Unless otherwise stated in this document, the following are used:

- **Electrolytic capacitors:**
Long leg (anode) to square pad.
- **Diodes/LEDs:**
Striped leg (cathode) to square pad. Short leg to square pad for LEDs.
- **ICs:**
Square pad indicates pin 1.

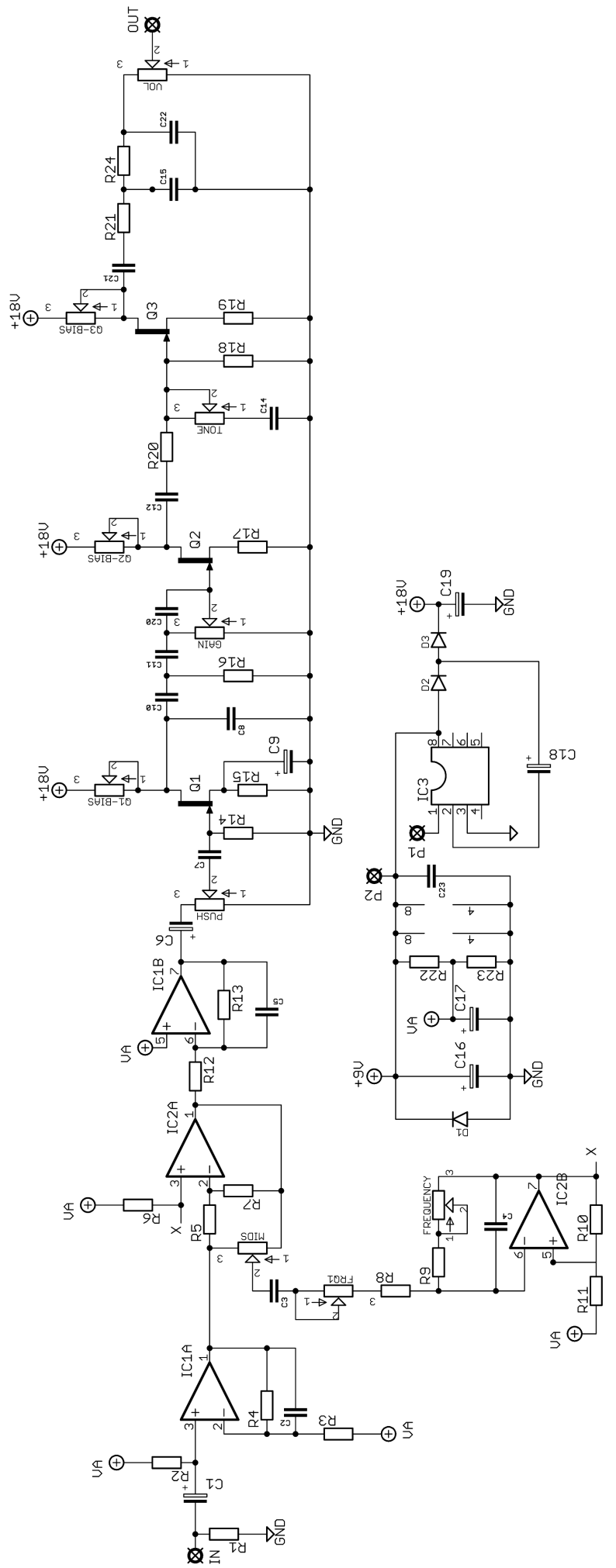
Schematic + BOM

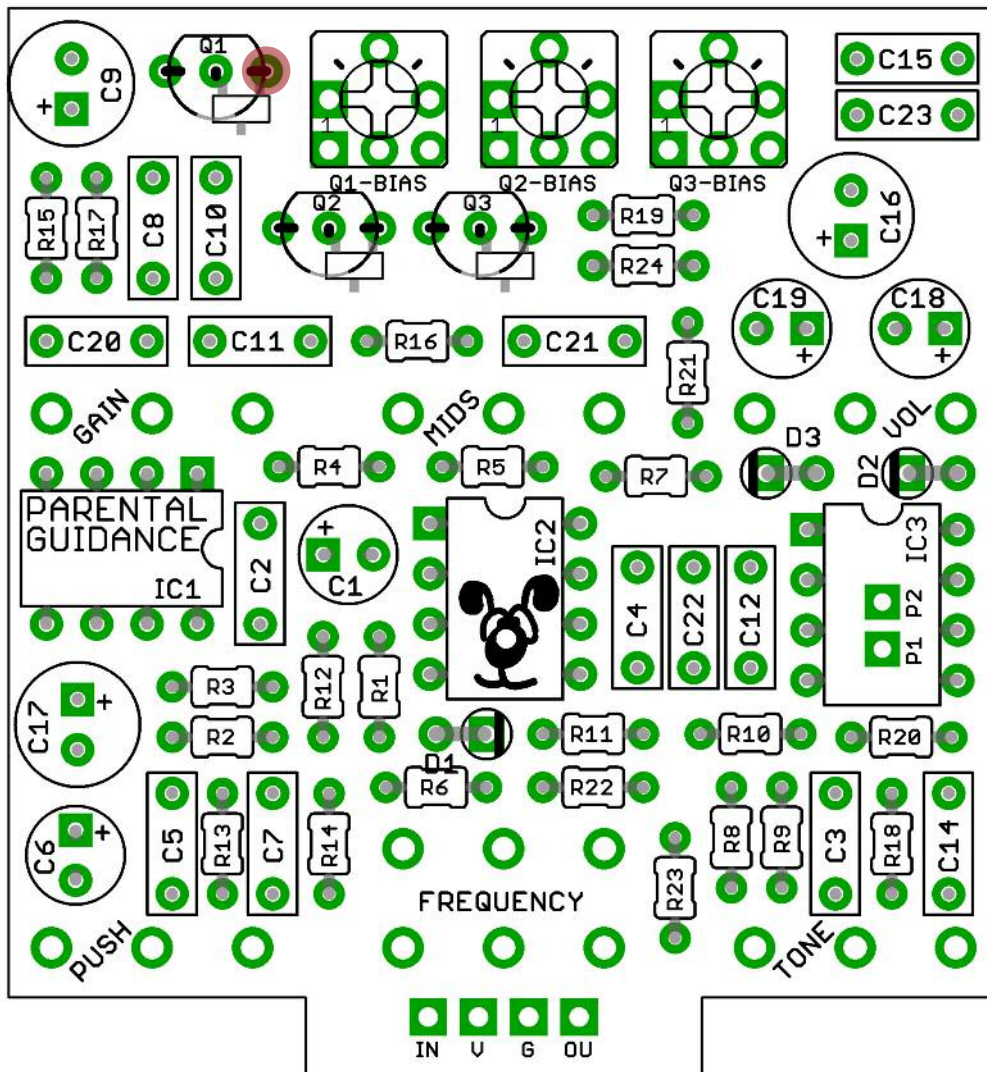


R1	1M	C1	4u7 elec	D1	1N4001
R2	470K	C2	47p	D2-3	1N5817
R3	4K7	C3	10n	Q1-3	J201*
R4	10K	C4	1n5	IC1	5532
R5	22K	C5	47p	IC2	072
R6	3K3	C6	4u7 elec	IC3	7660SEPA**
R7	22K	C7	22n	FREQ	100KB DUAL
R8	5K6	C8	470p	GAIN	500KA
R9	5K6	C9	47u elec	MIDS	10KB
R10	6K8	C10	4n7	PUSH	10KB
R11	3K3	C11	4n7	TONE	500KA
R12	4K7	C12	10n	VOL	50KA
R13	4K7	C14	4n7	T1-3	100K TRIM
R14	1M	C15	3n3		
R15	1K5	C16	100u elec		
R16	470K	C17	100u elec		
R17	2K7	C18	10u elec		
R18	470K	C19	10u elec		
R19	330R	C20	470p		
R20	120K	C21	10n		
R21	12K	C22	3n3		
R22	10K	C23	100n		
R23	10K				
R24	12K				

*Pads are included for through-hole or SMT versions of J201.

**You can also use MAX1044 or LT1054. See notes on page 5 about pads P1-2.





BIASING

Once built the FETs need to be biased. Set your multimeter to DC and attach the common probe on a ground point.

Turn the Gain and Tone pots to full.

Place your + probe on the drain of each FET in turn (Q1 marked above) and adjust the corresponding trimmer until you get to between 10.5-11V.

You can set them a bit lower if you find the distortion a bit raucous.

The power and signal pads match up to the pads on our Direct Connect daughterboards.

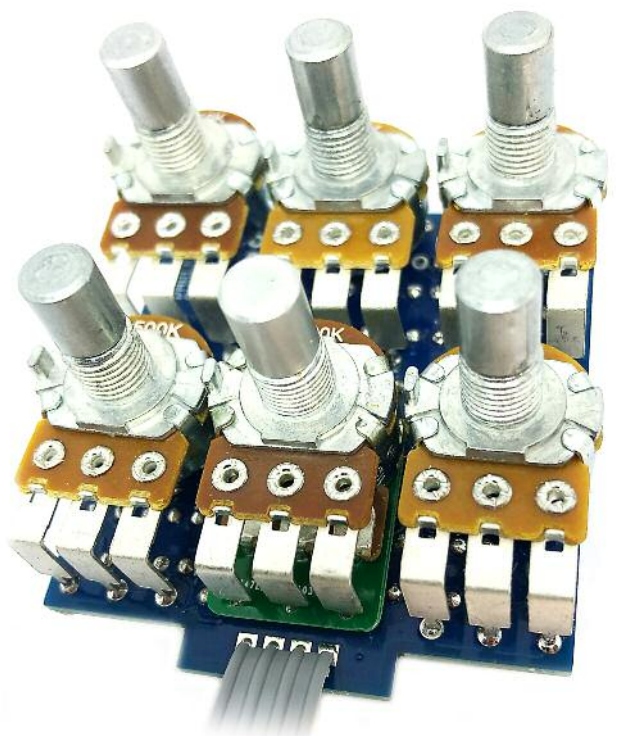
Be very careful when soldering the diodes and FETs. They're very sensitive to heat. You should use some kind of heat sink (crocodile clip or reverse action tweezers) on each leg as you solder them. Keep exposure to heat to a minimum (under 2 seconds). Same goes for the ICs if you aren't using sockets.

Snap the small metal tag off the pots so they can be mounted flush in the box.

You should solder all other board-mounted components before you solder the pots. Once they're in place you'll have no access to much of the board. Make sure your pots all line up nicely.

CHARGE PUMP

If you're using a 7660 or MAX1044 you need to place a jumper wire across pads P1-2. For LT1054 leave these open.



Test the board!

Check the relevant daughterboard document for more info before you undertake this stage.

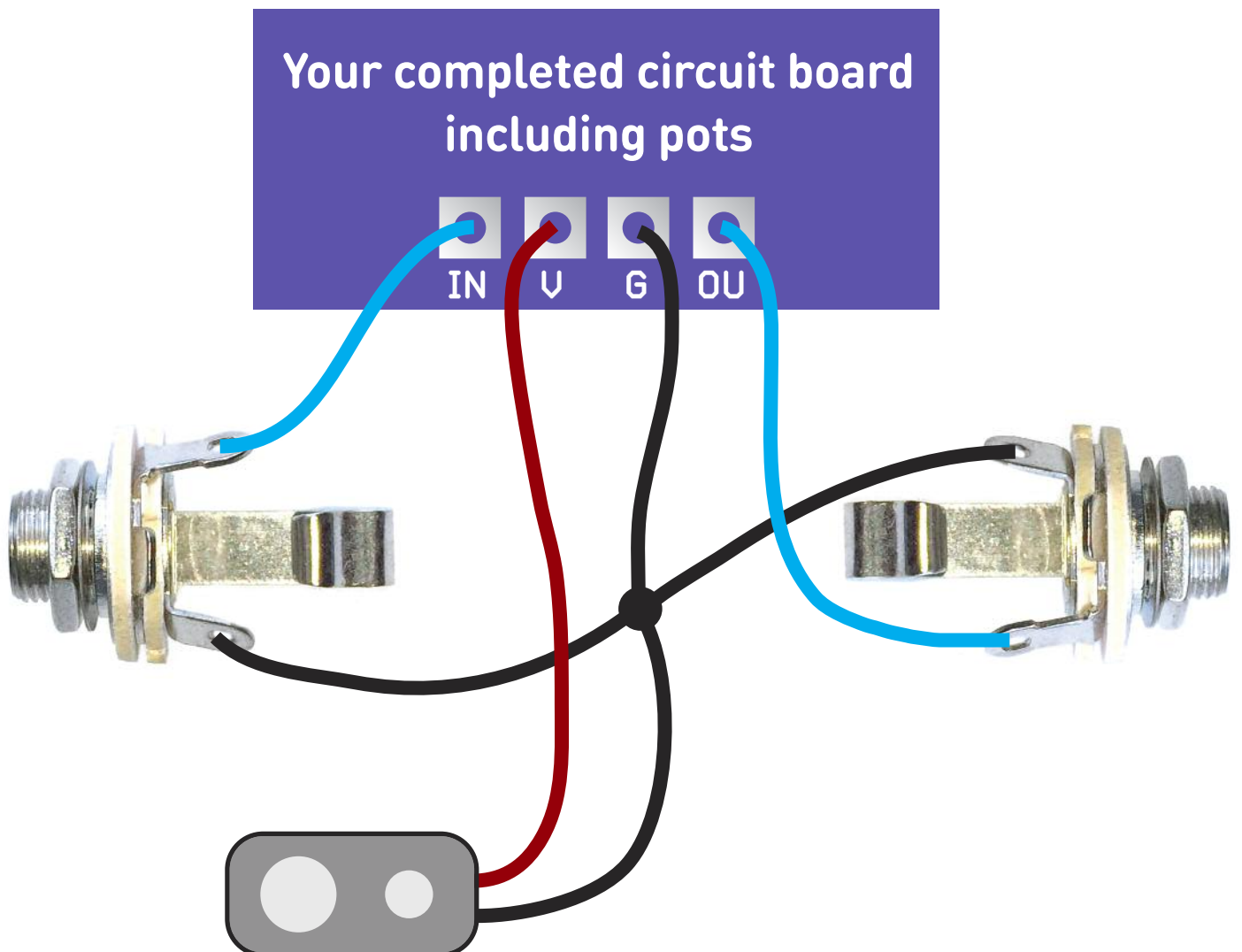
UNDER NO CIRCUMSTANCES will troubleshooting help be offered if you have skipped this stage. No exceptions.

Once you've finished the circuit it makes sense to test it before starting on the switch and LED wiring. It'll cut down troubleshooting time in the long run. If the circuit works at this stage, but it doesn't once you wire up the switch - guess what? You've probably made a mistake with the switch.

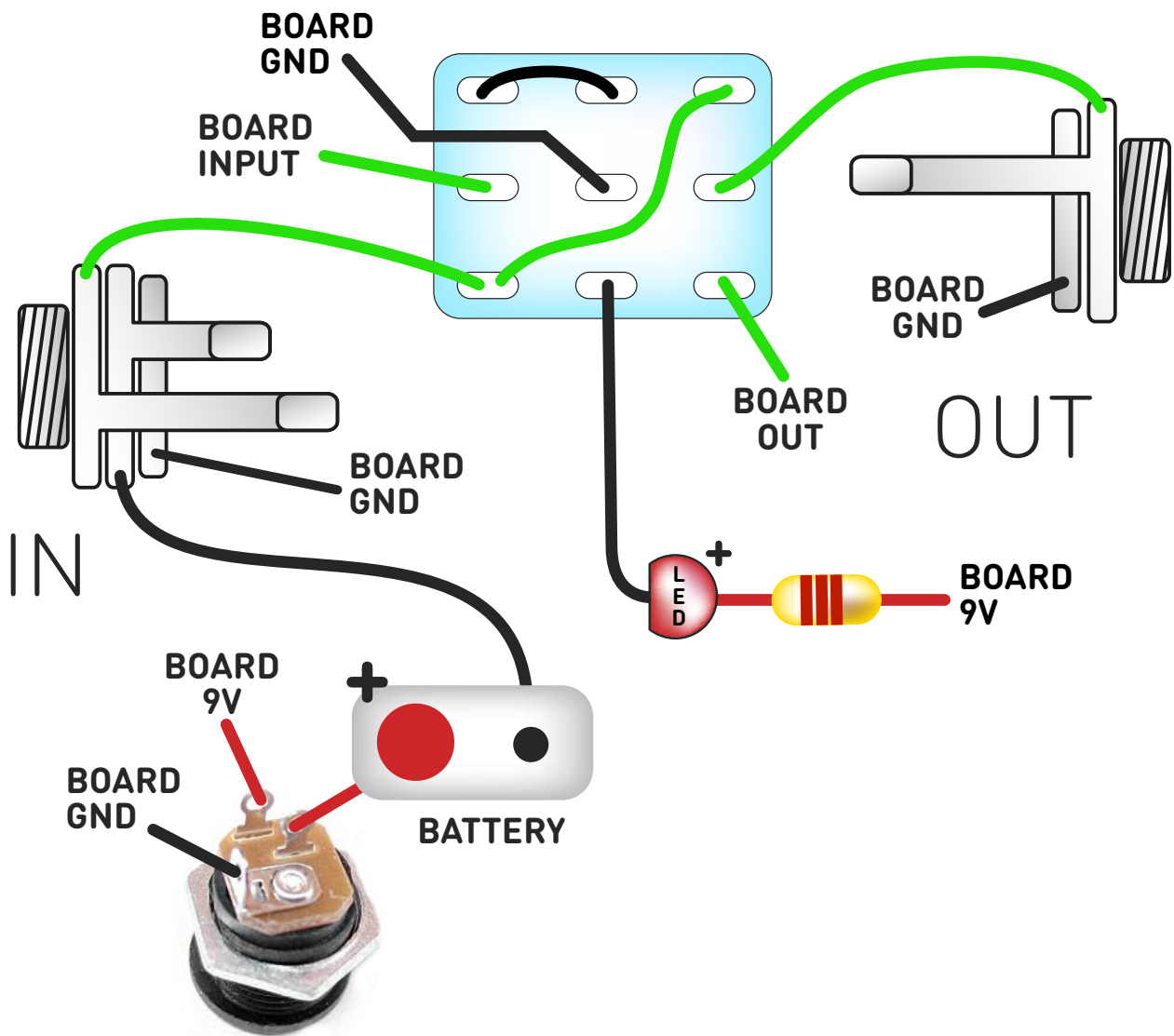
Solder some nice, long lengths of wire to the board connections for 9V, GND, IN and OUT. Connect IN and OUT to the jacks as shown. Connect all the GNDs together (twist them up and add a small amount of solder to tack it). Connect the battery + lead to the 9V wire, same method. Plug in. Go!

If you're using a ribbon cable you can tack the wires to the ends of that. It's a lot easier to take them off there than it is to desolder wires from the PCB pads.

If it works, carry on and do your switch wiring. If not... aw man. At least you know the problem is with the circuit. Find out why, get it working, THEN worry about the switch etc.



Wire it up (if using a daughterboard please refer to the relevant document)



Wiring shown above will disconnect the battery when you remove the jack plug from the input, and also when a DC plug is inserted.

The Board GND connections don't all have to directly attach to the board. You can run a couple of wires from the DC connector, one to the board, another to the IN jack, then daisy chain that over to the OUT jack.

It doesn't matter how they all connect, as long as they do.

This circuit is standard, Negative GND. Your power supply should be Tip Negative / Sleeve Positive. That's the same as your standard pedals (Boss etc), and you can safely daisy-chain your supply to this pedal.

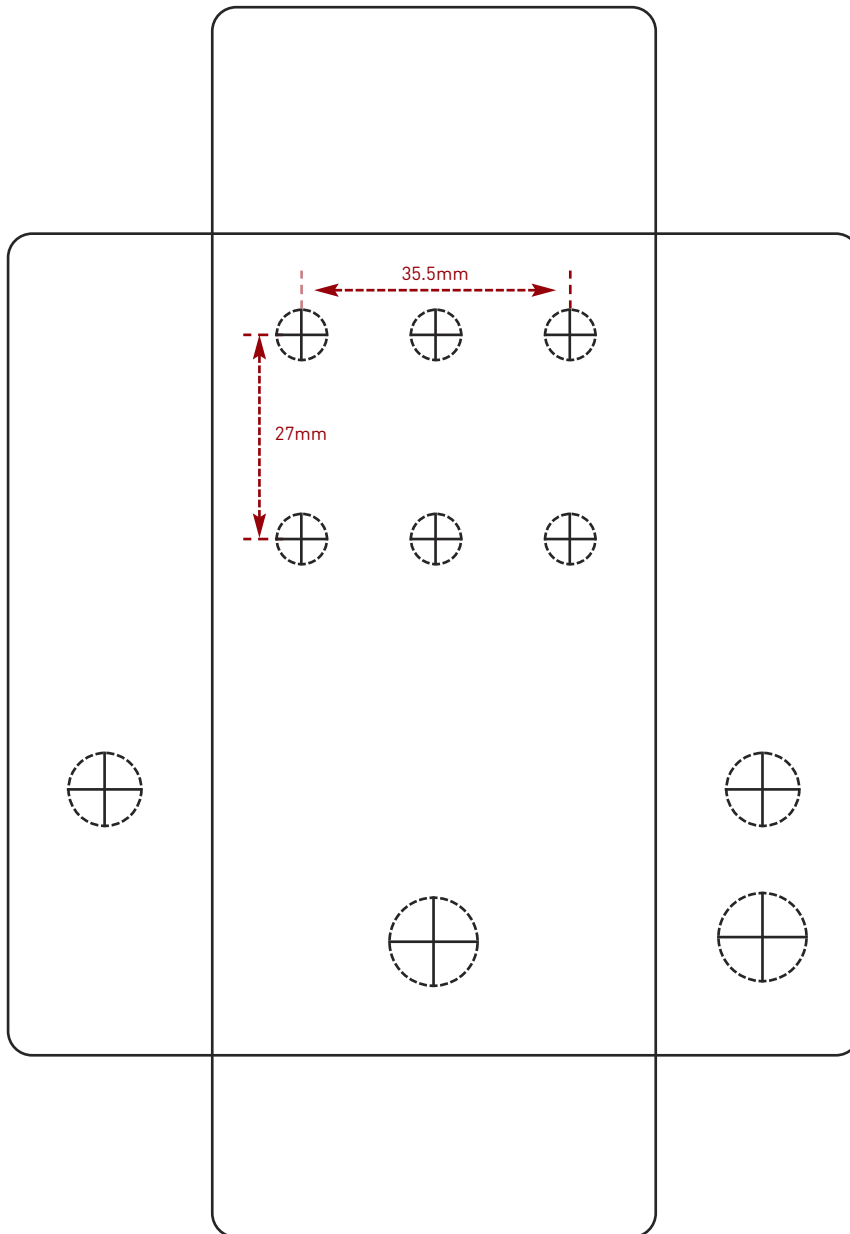
Drilling template

Hammond 1590B
60 x 111 x 31mm

Recommended drill sizes:

Pots	7mm
Jacks	10mm
Footswitch	12mm
DC Socket	12mm
Toggle Switches	6mm

It's a good idea to drill the pot and toggle switch holes 1mm bigger if you're board-mounting them.
Wiggle room = good!



This template is a rough guide only. You should ensure correct marking of your enclosure before drilling. You use this template at your own risk.
Pedal Parts Ltd can accept no responsibility for incorrect drilling of enclosures.

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